India, where so many circumstances combine to favour its occurrence? The answer to this question I must leave to others who have had larger Indian experience than myself; and we must only hope that, now that more attention is being shown to the analysis of drinking-water in India, under the auspices of Dr. Macnamara and others, and that special inquiries as to the nature and spread of cholera are being systematically carried out by Dr. Cunningham, more light will be thrown upon the subject, and many of the doubts, which now surround it, effectually cleared up and set at rest.

PROPHYLAXIS OF ASIATIC CHOLERA.*

By HENRY MACCORMAC, M.D.,

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I HAVE had a good deal of experience of Asiatic cholera. In the year of its outbreak, I was physician to the Cholera Hospital in Belfast, and for some months was day and night in the midst of the malady. I do not recollect the exact statistics, but two or three thousand cases passed at that time through my hands. There is considerable resemblance between English cholera in the stage of collapse and Asiatic cholera. In English cholera—I speak of the period of collapse—the pulse ceases at the wrist, the skin becomes deadly cold, and the features shrink, but the patient does not display the blue black skin which we witness in Asiatic cholera. There is not the stench which attends the latter; and, more especially, the *zumé* or leaven which causes Asiatic cholera to be a communicable malady does not exist in English cholera.

Many, I know, do not look upon Asiatic cholera as communicable. I do not share this conviction. Within certain limits, I consider Asiatic cholera a highly communicable malady; and I have no hesitation in proclaiming, speaking of my own conclusions, that every case without exception, occurring in Europe, is, was, and will be the result of infection. All the assistants and all the servants who had not had the malady before, myself expected, contracted the disease; some of them, indeed, twice or thrice when they came to reside within the hospital boundaries. Two, if not three, gate-keepers died rapidly in succession. Out of hospital, the instances which, as I believe, I could trace to infection, were very frequent, and the negative evidence of cases where infection could not be traced, or at least was not traced, did not, at least as I most firmly believe, invalidate the direct evidence of infection. The number of those in indigent circumstances who contracted Asiatic cholera were out of all proportion greater than of those in opulent life. Wherever crowding was excessive, exposure to the malady great, and sanitary laws were otherwise violated, there cholera was at once frequent and destructive. The disease, when epidemic, followed, indeed, precisely the same law as to prevalence which plague and fever always do. The ancient motto is inverted. The rich are spared while the poor are decimated. It was, indeed, *parcere superbis, debellare subjectos*. The rich, indeed, were not all exempt, but they were very much less frequently assaulted than the poor.

It becomes then vastly desirable under these circumstances, first, if possible, or at least as much as possible, to stay the advances of Asiatic cholera altogether; and next, until that be done, or even if that cannot be done, to realise as much security as is practicable in the event of the actual invasion of the malady. No disease more strikingly attests the exceeding efficacy of early treatment than does Asiatic cholera. The evidence afforded in Glasgow, to mention no other locality, is quite conclusive on this point. Persons went daily, if not twice daily, from house to house, and wherever they found any one labouring under premonitory diarrhoea, as it was termed, they instantly administered a dose of cholera mixture, and, I believe, left other doses to be used in case of any return of the diarrhoea. The result was, that in every 1400 cases of diarrhoea thus met, there was but one death; whereas, if it had been left alone, the half of those attacked probably would have perished. It would be difficult, I think, to adduce any stronger evidence of the efficacy of remedial measures zealously, timely, and effectively administered than this. Nevertheless, numbers died in Glasgow; and the ravages of cholera, since its first introduction into Europe, have been very great indeed.

Under these circumstances, it occurred to me that it would be excessively desirable, so far as it was possible, to anticipate even the premonitory diarrhoea. For, if only we can succeed in averting the disease, were it in its mildest form, we also avert the dangers and the mortality, which more or less attend the developed malady. In 1854-5, some repairs going on, and a communication having been opened with the infected town, forty of the inmates of the District Asylum for the

Insane, to which I was visiting physician, were assailed with Asiatic cholera, and seventeen almost immediately perished. I instantly caused to be prepared a large admixture of what might be termed sulphuric acid lemonade, in the proportion of half a drachm of the dilute acid to each dose, and, zealously aided by the resident physician and my son, had this administered daily to every one of the four hundred inmates of the establishment. The twenty-three residuary cases of the forty who were attacked remained, of course, under treatment, and made good recoveries; but not a single other fresh case ensued, and the malady then and there, in fact, disappeared. In the event of the apprehended invasion of Asiatic cholera, and, *à fortiori*, when it had actually occurred, I would urge the administration, once or twice daily, to every adult member of the community, of half-drachm doses of dilute sulphuric acid, as the most generally available, in any convenient vehicle. Drinking-water, previously filtered, should invariably be raised to the boiling-point; and, while hot, flavoured with a pinch of tea or coffee, a chip of cinnamon, quassia, gentian, dried orange-peel (any of them), or else a small fragment of highly toasted bread. In China and Japan, the water, before drinking, is almost invariably cooked and flavoured with a little tea. I ascribe, indeed, much of the immunity enjoyed by the people of these countries from the ravages of Asiatic cholera to the prevalence of this most beneficial practice. To children, half or less of the above amount might be given. Of course, *il va sans dire*, that every reasonable sanitary precaution, such as burnt earth-closets and cooked drinking-water, should in addition be taken. I have been at considerable pains to make these views generally known; and, assuming that I have established the prophylactic efficacy of dilute sulphuric acid, and my experience has not been confined to the instance which I narrate, the profession, if they will only take the matter up, have it, I believe, in their power to abate the ravages of cholera, and bring the malady effectively within human control.

ON SOME RECENT RESULTS IN PATHOLOGICAL HISTOLOGY; AND ON SCIENTIFIC THERAPEUTICS.*

By EDWARD LONG FOX, M.D.,

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WHILST the age of our immediate predecessors—of Brodie, of Bright, of Addison—was essentially an age of pathological anatomy in its broadest sense, the last fifteen years may be said to have been more particularly a period for the study of pathological histology. Doubtless the first effect of such study has been to split up various subjects into subdivisions so minute as to be scarcely practical in clinical medicine. But work that is real must always lead onward to truth, and succeeding generations will recognise with thankfulness the energy of the microscopists; and whilst, on the one hand, the very minuteness of the distinctions drawn may seem unpractical, on the other hand, an accurate knowledge of the primary tissues involved in disease allow grand generalisations in pathology of which hitherto we had not dreamed. Thus we find the same morbid condition in precisely the same tissue in various organs causing cirrhosis of liver, small granular kidney, fibroid degeneration of lung, sclerosis of the nervous centres, and one form at least of mamillation of the gastric mucous membrane. We recognise that symptomatic phenomena of the most varied description, differing as far as gangrene of a limb and chorea, may depend upon embolism of the smallest arteries; whilst aneurismal dilatations so minute as only to be recognised by the microscope, and so multiple as to give the idea of an aneurismal diathesis, but causing symptoms, according to locality, that have hitherto given names to a vast number of diseases, are now capable of being classified under one pathological category.

It would be tedious to multiply such examples; but this very year has been the era in England of one such generalisation, so important that it cannot be passed over in silence. The teaching of Laennec and of Louis had during the past few years received a rude shock from the dogmatic assertions of Niemeyer and his followers; and many English physicians, with that confidence in German pathology that seems sometimes to lead into error, began to puzzle their brains in the endeavour to bring their own experience into unison with the new doctrines. Without entering upon the question as to whether tubercle itself is a product of inflammation or no, there is no doubt, as Dr. Addison long ago pointed out, that many pathological conditions of the lungs were called tuberculous that were in reality the resu

* Read before the Public Medicine Section at the Annual Meeting of the British Medical Association in London, August 1873.

* From President's Address, delivered at the Annual Meeting of the Bath and Bristol Branch.

tion. But it is a very different matter when we are asked to believe that tubercle is only found when the organ has been infected from a spot of inflamed tissue that has undergone caseous degeneration. It is difficult, indeed, to believe that such infection can take place independently of some blood-predisposition—in fact, of the consumptive diathesis. The magnificent discussion during this spring at the Pathological Society has arranged these points on their true basis. Caseation is rare, compared with the extreme frequency of tubercle; and, as Dr. Wilson Fox has well said, “the evidence of caseous glands serving as a source of this infection is only evidence of a secondary infection from a primary tuberculous change. You may get a tuberculous gland secondary to any common irritation in a predisposed subject; that is, a carious tooth or a cutaneous disease of the head may give rise to a change of a tuberculous nature in the nearest gland. And I believe,” he says, “that what we thus see externally takes place in the lung. Any irritation of the tissue may, in the presence of local or constitutional predisposition, give rise to secondary growths, diffused or circumscribed, which constitute tubercle, and which may be the source of further infection, and that with or without antecedent caseation, though this stage and that of softening are most favourable to the change.” Dr. Moxon asserts that the general anatomical characters of phthisis form a sufficient basis for its separation from all other kinds of lung-disease, and its union into one single kind. I should be inclined myself to go a step further still, and say that clinical phenomena, with few exceptions, prove the close affinity of the various forms of phthisis. The height and the irregularity of the temperature, the general aspect, the sweating, the pulse, the gastric and abdominal symptoms, the urine, and the nerve-phenomena, are much the same in acute miliary tuberculosis and in those exacerbations of chronic phthisis that we so often witness and relieve; in both cases showing, except in the thermometric diagrams, a close approximation to the fevers, although the evidence of contagion is yet too slight to build upon.

But, whilst this generalisation is the chief feature of the year, we owe to a comparatively recent period many other important facts in pathology. It is to the elders of the present generation that we owe the differential diagnosis of fevers—a diagnosis founded in great measure upon *post mortem* observations. It is to an observer of the present day that we are indebted for so much of our knowledge of diseases of the heart, and especially fatty degeneration. We now know, too, that diseases of the heart producing congestion of internal organs may set up increased growth in the connective tissue of these organs, and all the evils resulting from it, as surely as the imbibition of spirituous drinks will cause cirrhosis of the liver. It is from a controversy of the present hour that we gain an intimate knowledge of the morbid conditions of the small arteries in some forms of renal disease; one set of observers believing in a degenerative change, a hyaline fibrosis of the arterial coats; others, in an hypertrophy of these tissues; the fact being, as is so often seen, that both are right, but neither universally. And, before we leave the kidney, I cannot help pointing out how later research has utilised Dr. Bright's great generalisation, and, by dividing the various morbid affections, has shown how much more curable some are than others, and how various they are clinically, pathologically, and therapeutically.

Much might be said, in this relation, on abdominal tumours, on true and false chlorosis, on that obscure disease of the glandular system named by a late author “adenia”, resembling in some of its external appearances scrofulous adenitis, and yet so dissimilar pathologically and in its relation to remedies; whilst the whole range of pigmental disease is full of interest, especially that morbid affection named after Dr. Addison, and proved by him to have some connexion with disease of the suprarenal capsules, or rather, as shown by later observers, with one special degenerative change in them.

All thoughtful members of our profession will heartily second me in saying that, of all the various branches of our noble science, the duties of an alienist physician are at once the grandest and the most difficult. He must be a physiologist of no mean order, an observer of men and manners in no common degree, a physician trained more than any of us in the knowledge of all morbid action, and especially, if I may so say, of reflex disease—that is, of the influence of the abnormal condition of one part on the functions of distant organs; and, above all this, he must have considerable experience in mental phenomena, healthy and unhealthy. It is, I feel sure, a satisfaction to the Branch that this department is so worthily represented here, both in public and private institutions; and, whilst we admire the varied attainments and accomplishments necessary to the successful prosecution of this important branch of science, it is pleasant to note that in our day the idea of functional disease is gradually vanishing from our text-books. Not so many years ago, although the treatment of mental disease had made enormous progress, its pathology was supposed in large measure to

consist in a greater or less supply of blood to the brain, with some inflammatory processes. The minute pathological anatomy of the brain was absolutely unknown; and the records of autopsies, such as are met with in Esquirol's great work, are meagre and unsatisfactory. Now, however, how changed is all this! Although we may not always be able to say with accuracy during life the precise lesion that will be found in mania, general paralysis, etc., yet we know that a lesion exists; and Morel in France, Griesinger in Germany, and Hammond in America, to say nothing of numerous workers of still higher note in our own country, are year by year making the pathological anatomy of this branch of disease more certain and more easily recognised. It is on this common ground of pathology that we, working in hospitals and in private practice, can be of some assistance to them, as also much of their work illustrates and merges into ours.

It is with this view that I venture to detain you for a few moments, whilst we pass in rapid review some of the pathological details, the knowledge of which is either wholly new during the last twenty or twenty-five years, or has been largely added to within that period. Such are congenital abnormalities of the nervous centres; incompleteness of some of the parts of the encephalon; abnormalities of the vascular system, including variations in the amount of blood in the brain; diseases of cerebral vessels; embolism; thrombosis; atheroma; aneurisms, large and miliary, of the vessels of the pia mater and the brain; inflammations of the cranial and spinal contents, including cerebro-spinal meningitis; and cerebritis with or without meningitis, with or without abscess; degeneration embracing atrophy, with compensating increase of cerebro-spinal fluid; softening, from causes non-inflammatory, such as embolism of the nutrient arteries, or gradual disease and narrowed calibre of the same, and that important pathological condition met with mainly in the spinal cord, but often enough also in the brain—thickening of the connective tissue—the so-called sclerosis, whilst in connection either with the membranes, the vessels, or the neurolyc itself, we may meet with almost every kind of morbid growth. And lastly, we owe to Brown-Séquard, Lockhart Clarke, and others, the fact that many of us have had wholly to unlearn what we were taught as to the physiology of the spinal cord. The transverse division of the posterior columns producing not motor or sensory paralysis, but loss of co-ordinating power; the fact that the anterior columns are not only closely connected with motion, but to some extent also with sensation; the decussation of the conductors of sensation in the cord itself, are all points that have been recognised by experiment and by pathological observations in the course of the last twenty years; whilst the observations of Professor Ferrier are just now being given to the world, causing a revolution in much of the commonly received physiology of the brain, and seeming also to prove that the cerebellum has nothing to do either with the generative faculty or with co-ordination in general, but that it is the co-ordinating centre for the muscles of the eyeball, and that each separate lobule in rabbits is a distinct centre for special alterations of the optic axes.

It would, indeed, be bold to say that a knowledge of these more minute details in the physiology and pathology of the nervous centres, enables the most accurate observer of mental phenomena to speak with absolute certainty of the relations between definite symptoms and recognisable lesion; but, granted only the spirit of research that for some years past has animated many minds in England and other countries on these subjects, the time cannot be far distant when we shall pass out of the region of doubt and uncertainty into the brighter light of exact science.

But our special aim is not only after truth for its own sake, but after truth in its practical utility in curing our patients. Many of us may be physicians, students of nature, but we are all *medici*. Our very name, as also the means we use—“Remedies,” show us to be professors of the *Ars Medendi*. Pathology is good, diagnosis is good, but, with it all, we fail in our purpose if we do not cure. It is the great boast of the English school of medicine, of the tone of medical thought in England, that the wellbeing of the patient is the ultimate object of all our efforts; and, therefore, it is that the question of scientific therapeutics is becoming with us of paramount importance.

It is nonsense to say that our treatment now is universally empirical; it is worse than nonsense to throw any obstacle in the way of men who are trying to add to our knowledge, by chemistry, by electricity, by the application of cold, by carefully observing the action of each drug by itself on the temperature, pulse, respiration, and excretions of the patient.

A book has been put into my hands by a well-known member of this Branch, Mr. Alfred Smith, of Brunswick Square. It is entitled, “*The Royal Pharmacopœia, Galenical and Chymical, according to the practice of the most eminent and learned Physicians of France*,” by Mons. Charras, and faithfully Englished, 1678; and one of the medical admirers of its author says that it is “so exact a collection of all that the antients and

moderns have afforded profitable or curious in reference to Physick, that they who shall read this may spare themselves the pains of reading any other." With much, of course, that is laughable to us in our day, there are the elements of truths, and, above all, the idea of progress. "There are," he says, "three sorts of virtues attributed to Medicaments. The first sort, which by the antients were esteemed elementary, and only ought to be attributed to the principles whereof it is composed; that is, that it heats, cools, moistens, and dries. The second qualities are the products of the first; for the property of heat is to open, rarefie, attenuate, attract and so on. The third qualities are hidden, and we can only find them out by experience, as when a Jasper apply'd to a wound stops the blood; when a Toad dry'd, being held in the hand, stays bleeding at the nose, and assuages the tooth ache, which is also performed by the bone in the foreleg of the same Toad; when a stick of Ash boyled under a certain constellation, stops all losses of blood; when a Hazel-stick, gathered in its proper season, heals all contusions; when the Eagle-stone, hung about the neck, hinders abortion, and hastens and facilitates birth, being ty'd to the thigh, . . . and several other effects of the same nature, of which Philosophers labour to give the natural reason."

The philosophers probably had some difficulty in explaining the advantage of the oil of scorpions, made by plunging into boiling oil sixty of the fairest and most vigorous live scorpions that can be got, though it was said to have the power of dissolving renal or vesical calculi; or of the lozenges of vipers, used in malignant fevers; or of the forty-eight ingredients in the Mithridate of Democrates for procuring rest; or of the sixty-three ingredients in the treacle of Andromachus the elder; or even of the shavings of man's skull, which formed an important element in the composition of an anti-epileptic water. Such illustrations of the therapeutics of a bygone day serve only to raise a smile. But the principle of reasoning should be, and is, the same for us as for our queer old writer of two centuries ago: first, the observations of experience; and secondly, the labour of the philosophers—the deduction from the experimental data. And not thus only. Although Bacon has stigmatised the doctrine of final causes as "barren like a virgin consecrated to God that can bear no fruit," yet Harvey avowedly owed his great discovery to that very doctrine, and much of Sir Charles Bell's best work was done in enthusiastic admiration of the same principle.

Much of what seems unscientific in our practice depends upon the very anxiety for our patient's life. In fever, for example, one may think the poison itself the all-important element, and in treatment may favour elimination; another may fear lest the high temperature may destroy life, and use all his energy towards its reduction; another may watch the patient's strength, and do little but feed or stimulate. In all the result may be good. In all, paradoxical as it may sound, a real step forward has been made towards scientific therapeutics. But when in ague we see the pyrexia, the splenic enlargement, and the absence of urea in the urine—and by quinine treatment the subsidence of all pyrexia, the diminution in the volume of the spleen, and the reappearance of urea, it is impossible to deny that here our therapeutics are scientific. Nay, more! by means of our therapeutics, we are nearer an accurate understanding of the morbid phenomena.

The same may be said of other diseases, of the pathological anatomy of which we know little or nothing. We can often treat with success affections such as epilepsy, chorea, delirium tremens, spinal irritation, and that strange spinal jar with which we are now so conversant as the result of railway accidents. It is not too much to say that the therapeutics of these affections have shed some light on the nature of the affections themselves. Such examples might be multiplied.

The action of diaphoretics, of many diuretics, and of most of the purgatives, the *modus operandi* of the alkalies on the urine, of ammonia in the treatment of arterial clot, of the bromides, of strychnia, and of ergot, are all illustrations of advance in our knowledge of scientific therapeutics; whilst at least as much may be said as to the mode of action of several of the sedatives and narcotics.

Experience itself is a scientific factor, on the ground that the same phenomena always occurring under similar conditions form a law. As to what is beyond and above that law, human reasoning will scarcely carry us. But it is incompatible with common sense not to be sure that laws so grand in conception, so minute in detail, necessarily imply the existence of a law-giver. And it seems to me impossible that any physiologist in the highest sense, or any worker in pathology, which is only physiology under different conditions, can be so blind to the plainest teachings of his own science, as to deny the existence of a first cause. Such men are not numerous in our profession; and we shall all agree in some noble words of Lecky, in his *History of Rationalism*, with which I shall close this address.

"Even scientific men sometimes forget that the discovery of law is not an adequate solution of the problem of causes. When all the mo-

tions of the heavenly bodies have been reduced to the dominion of gravitation, gravitation itself still remains an insoluble problem. Why it is that matter attracts matter, we do not know; we perhaps never shall know. Science can throw much light on the laws that preside over the development of life; but what life is, and what is its ultimate cause, we are utterly unable to say. The mind of man, which can track the course of the comet, and measure the velocity of light, has hitherto proved incapable of explaining the existence of the minutest insect, or the growth of the most humble plant. In grouping phenomena, in ascertaining their sequences and their analogies, its achievements have been marvellous; in discovering ultimate causes it has absolutely failed. The first principle, the dynamic force, the vivifying power, the efficient causes of those successions, which we term natural laws, elude the utmost efforts of our research. We know nothing, or next to nothing, of the relations of mind to matter, either in our own persons or in the world that is around us; and to suppose that the progress of natural science eliminates the conception of a first cause from creation by supplying natural explanations, is completely to ignore the sphere and limits to which it is confined."

OBSERVATIONS ON ALBINISM.*

By C. S. JEAFFRESON, Esq.,

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THE condition of the human body which is characterised by the total absence of pigment from the structures in which it is naturally deposited, and which we term albinism, did not escape the observation of some of the most ancient scientific writers and observers. Thus we find this peculiar condition mentioned by Pliny and Herodotus. Its occurrence was first called attention to amongst the negro races. This is not surprising, when we consider the striking contrast of colour to which in their case it gives rise; and we have adopted the common name of albino from the Portuguese, who first employed it to indicate a white Moor. It was commonly imagined that these white Africans formed a distinct race; but the more extended observations of recent years have shown that albinos are common to all countries and all races. Pickering mentions their being found in Java, Sumatra, the Fiji Islands, the Isthmus of Darien, and many other places. But, wherever they are found, they conform in all their external appearances except colour to the race from which they sprang; and thus, among the Africans, they have the thick lips and curly hair peculiar to this people. Although albinos do not constitute a special race of mankind, there can be little question that their condition is liable to descend hereditarily to their offspring. This is especially the case when both parents present the same peculiarity; and thus, in countries where albinos are common, families of them may occasionally be seen, the result of marriages between two persons in the same condition. Albino children are so rare in Europe as to render such a combination of circumstances unlikely to occur; and I can find no record of an albino family amongst any of the more civilised countries of our own quarter of the globe.

Although the albino state was recognised at such an early period, it did not attract particular attention till the end of the last century, when it was noticed by Buffon. Blumenbach made it the subject of special study, and pointed out its proximate cause—viz, the deficiency of pigment in the rete mucosum of the skin and other structures in which it is normally present. His observations were followed by some interesting papers by Dr. Buzzi of Milan, who had the opportunity of dissecting an albino. He confirmed Blumenbach's views, and further pointed out that in these subjects the rete mucosum was entirely absent. In this, however, he must have been in error; for it is impossible that the skin could live and grow without the layer of soft and rapidly increasing cells which constitute this membrane, and which provide for the proper reproduction of those parts of the skin which are being daily destroyed as the result of the wear and tear of every-day life.

From this date, the peculiar condition of albinos was looked upon as a disease whose proximate cause was the absence of pigment in the tissues. It is not common to human beings alone, but is found among all the different varieties of warm-blooded animals. Familiar instances of it exist among rats, mice, rabbits, cats, dogs, and birds of all kinds. Although the proximate cause of albinism has been fully recognised and dwelt upon, its remote cause is still a matter of conjecture. Buffon supposed that it indicated a tendency of the human body to revert to what he considered the natural colour; and Buzzi observed in two cases that the mother, during the time of conception, had an inordinate desire for milk, which she frequently gratified. Shock during the period of gestation, peculiarities in the seminal fluid of

* Read before the Northumberland and Durham Medical Society.